

REMARKS/ARGUMENTS

After the foregoing Amendment, Claims 1-36 are currently pending in this application. Claims 1, 2, 6, 12, 19, 27, and 33 have been amended to more distinctly claim subject matter which the Applicants regard as the invention. Applicants submit that no new matter has been introduced into the application by these amendments.

Claim Rejections - 35 USC §102(e)

Claims 33-36 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application No. 2004/0204108 by Etkin et al. (hereinafter "Etkin").

Claim 33 discloses a method wherein beam forming between two entities that are communicating with each other is coordinated so that the degree of alignment between the beams is above a predetermined level for a predetermined length of time. Etkin discloses a method where two antennas transmit the same signal so that the beam from one of the antennas creates a constructive/destructive interference pattern with the beam of the other antenna. This is not the same as the beam coordination of the present invention primarily because the two antennas of Etkin are not communicating with each other nor are they coordinating their beams so that the degree of alignment between the beams is above a predetermined level for a predetermined length of time.

Furthermore, Etkin discloses a method where the base station turns off the FPM and turns on a time-invariant broad antenna gain pattern if the number of mobile stations is less than a lower threshold. This is in direct contrast to the presently claimed method of reducing at least one adjustment parameter of a beam where the "degree of alignment between beams emanating from the two entities is above a predetermined level for a predetermined length of time". Etkin makes no mention of reducing an adjustment parameter for a predetermined length of time nor does it disclose adjusting the alignment between two beams from the two entities to be above a predetermined level. Rather, Etkin discloses a base station that is able to provide good coverage to the whole sector (paragraph 44). This is obviously not the same as the reducing an adjustment parameter of a beam so that the alignment between the beams is above a predetermined level as recited in claim 33.

Additionally, claim 33 recites a method for coordinating the use of beam forming between two communicating entities comprising the step of:

reducing at least one adjustment parameter of a beam of
at least one of two communicating entities communicating with
each other using beamed formed transmission and reception
signals ...

Etkin discloses a method where the base station turns off the forward power modulator (FPM) and turns on a time-invariant broad antenna gain pattern if the

number of mobile stations is less than a lower threshold (See paragraph 44 of Etkin.).

Unlike the present invention, Etkin is not related to adjusting the alignment of beams emanating from two communicating entities. Instead, Etkin is directed to the adjustment of beam width and induced SNR fluctuations in accordance with the number of mobile stations in a sector to maximize the throughput of the base station. (See paragraphs 0020, 0023, 0024 and 0030 of Etkin.). More specifically Etkin discloses, "if the number of mobile stations is greater than or equal to a higher threshold N_2 , the beam width is set to a small value and the fluctuation rate is set to a high value R_2 " (See paragraph 44 of Etkin.). In contrast to the method disclosed in Etkin, the method of claim 33 is not dependent on the number of base stations.

Furthermore, Etkin does not anticipate claim 33 because it does not disclose a method of coordinating beam forming between communicating entities. Instead it simply describes a method of beam forming (See paragraph 47 of Etkin.). Clearly the creation of the beams as disclosed in Etkin and the coordination of multiple beams from multiple entities are fundamentally different activities. As such the disclosure of Etkin does not anticipate claim 33.

Claims 34-36 are dependent on claim 33 and are allowable for the reasons stated above.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1-5, 23-28, and 29-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin in view of U.S. Patent No. 6,894,643 to Guo et al., hereinafter referred to as "Guo".

With respect to claims 1, 23, and 27, the claims recite coordinating the use of beam forming between two communicating devices with beam forming capabilities whereby the transmitted beams are aligned with each other using a correction factor determined from the measured error in alignment between the two beams. As explained above, Etkin fails to teach both a method of coordinating beam patterns of multiple beam forming devices communicating with each other and also fails to teach the method of aligning their respective communicating beams.

Claim 1, as amended, recites a method that includes determining a correction factor based on the measured error. The beam is then adjusted in accordance with the correction factor to coordinate the use of beam forming between two communicating entities. Neither Etkin nor Guo alone or in combination teach or disclose such a correction factor.

Further, the claim 1 has been amended to further clarify that the communication entities of the present invention are physically separate from each

other. This is in contrast to Guo wherein the two communicating entities are connected within the same unit.

Etkin is related to an effect of beam sweeping by the base station. Contrary to the present invention Etkin fails to disclose a scheme of measuring an error in alignment of two beams emanating from two communication entities, determining a correction factor based on the measured error, and readjusting the beams to realign the two beams. In Etkin, a base station adjusts beam width and SINR fluctuations based on the number of mobile stations in a sector served by the base station. Etkin further discloses that for a small number of users a broader beam is better whereas a highly directional beam is better for large number of users.

Guo teaches a method where the output signal is compared with a reference signal using a substitution element to create a difference signal. This difference signal is then used to adjust the weights applied to multipliers. Guo differs from the method recited in claims 1, 23, and 27 of the present invention in several important ways. First, the compared signals in the present invention are compared to each other and not, as is taught in Guo, to a standard reference signal. This is distinguishable from Guo as Guo fails to teach a method having two beams emanating from two different entities. Second the error that is being measured in the present invention is the error in one alignment of two transmitted signals, not the error between an output signal and a reference signal. Finally the present

invention does not use its error measurement to create a separate signal. Rather the error measured is used to align beams from two separate entities.

Accordingly, it is submitted that claims 1, 23, and 27 are allowable over Etkin in view of Guo. Claims 2-5, 24-26, and 28-32 are dependent upon claims 1, 23, and 27, respectively, which the Applicants submit are allowable over the cited prior art for the same reasons provided above with regards to claims 1, 23, and 27.

Claims 6-11 and 19-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin and Guo in further view of U.S. Patent No. 6,665,545 to Raleigh et al., hereinafter referred to as "Raleigh".

With respect to claims 6 and 19, for the reasons stated above with regards to claims 1, 23, and 27, any combination of Etkin and Guo fails to teach the methods of claims 6 and 19. Further, Raleigh discloses a method where the "transmit and receive sections of... [a] particular transceiver are calibrated" (column 21, lines 35-36) in order to correct "for amplitude and phase discrepancies between corresponding transmit and receive channel paths" (column 21, lines 45-47). This disclosure is clearly different from the coordination of the use of beam forming between two separate communicating entities recited in the present invention.

Accordingly, it is submitted that claims 6 and 19 are allowable over Etkin in view of Guo in further view of Raleigh. Claims 7-11 and 20-22 are dependent upon

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claims 6 and 19 respectively, which the Applicants submit are allowable over the cited prior art for the same reasons provided above with regards to claims 6 and 19.

Claims 12-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin, Guo, and Raleigh in further view of U.S. Patent No. 6,768,454 to Kingsley et al., hereinafter referred to as "Kingsley".

With respect to claim 12, for the reasons stated above with regards to claims 1, 23, 27, 6, and 19, any combination of Etkin, Guo and Raleigh fails to teach the method of claim 12. As such, any combination, in whole or in part, with Kingsley would not teach the method of claim 12.

Accordingly, it is submitted that claim 12 is allowable over Etkin, Guo, and Raleigh in further view of Kingsley. Claims 13-18 are dependent upon claim 12, which the Applicants submit are allowable over the cited art for the same reasons provided above with regards to claim 12.

Based on the arguments presented above, withdrawal of the 35 U.S.C. 103(a) rejection of claims 1-32 is respectfully requested.

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Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1-36, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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